SEEDS Technology Planning

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SEEDS Technology Planning

- Two components
  - Technology Identification & Development
    - SEEDS Process via ESTO AIST
  - Technology Infusion
    - TBD

- Key Challenges to Infusion
  - Culture Gap (technologist-to-operations)
  - Cost Gap (technology-to-operations)
    - TBD

Technology Readiness Levels (TRL)

- ESTO low range
  - basic research (TRL 1)
  - concept development (2)
  - proof-of-concept (3)
- Mid TRLs address
  - component validation in lab (4)
  - component/subsystem demo in lab with realistic data (5)
- ESTO technology exits
  - robust system prototype (6)
  - demonstrated in operational environment (7)
- Beyond ESTO range
  - technology is qualified in an operational environment (8)
  - "mission proven" fully integrated with operational systems (9)

Tech Infusion - Prototype to Product

- "Productization" Process
  - Technology infusion is like reuse
  - First time use for the technology component/system
- TRL 7 to 8
  - Planning, porting, test scripts, documentation, support tools, clear legal rights, and training engineers (broad & deep knowledge transfer)
  - Anticipate 1 to 2 years (depending on scope of technology)
- TRL 8 to 9
  - Testing, migration, training operations
  - Anticipate 3/6 months to 1 year

Changing the Culture

- Incentives to Infuse - Technologists
  - For more mature technology proposals (eg, entry at TRL 5) require
    - Technology Infusion Plan
    - Collaboration with operational (mission) Co-Is
      - Exit at TRL 7 requires validation by user (per plan)
    - Minimal documentation (self-documenting code)
    - Robust test scripts (user validated)
    - Minimal support tools

Changing the Culture

- Technology Users - Mission Developers role
  - Provide insight into system architecture (SEEDS can help) & technology needs
  - Provide relevant test data
  - Willingness to collaborate with technologists
- What incentives?

Changing the Culture

- Technology Management to enable infusion
  - Address intellectual property rights
  - Clear guidelines for what is appropriate for technology
  - Support travel; enable remote collaboration
  - Joint funding with technology users (Cooperative Agreements)
  - Infusion costs money

Recommendations, Issues

- SEEDS Vision
  - For Info Systems Technology
  - Leverage Earth Science 2025 Vision, Application 2010
- Develop Tech Infusion requirements for technology solicitations
- Avoid big integrated systems
  - Already SEEDS goal, but how to manage?
- Encourage collaboration with early tech adopters
  - But how to identify these people within SEEDS, what incentives?